

2.5 Factoring Short Cuts

ALWAYS LOOK FOR A COMMON FACTOR FIRST

Algebra tile short cut

Factor

$10x^2 + 17x + 3$

$15x + 2x$

	$5x$	1
$2x$	$10x^2$	$2x$
3	$15x$	3

These
multi = 30
add = 17

Now you try

$= 24 \times$

Factor

$2x^2 + 11x + 12 = 11 +$

	$2x$	3
x	$2x^2$	$3x$
4	$8x$	12

MAN short cut

Factor

$3x^2 - 5x - 2$

$\frac{M}{-6}$	$\frac{A}{-5}$	$\frac{N}{-6+1}$
		$\frac{-6}{3}$
		$\frac{1}{3}$

$(x-2)(3x+1)$

Product

-6	1
-2	3

top # goes
last

Bottom # go
with x

Factor

$x^2 - 8x + 12$

$\frac{M}{12}$	$\frac{A}{-8}$	$\frac{N}{-2, -6}$
		$\frac{-2}{1}$
		$\frac{-6}{1}$

$(x-2)(x-6)$

Now you try

Factor

$6x^2 + 13x - 5$

$(3x-1)(2x+5)$

$\frac{M}{-30}$	$\frac{A}{13}$	$\frac{N}{-2, 15}$
		$\frac{-2}{6}$
		$\frac{15}{6}$
		Reduce
		$\frac{-1}{3}, \frac{5}{2}$

Factor Fully

ALWAYS LOOK FOR A COMMON FACTOR FIRST

Factor

$10x^2 - 22x + 4$

⇒

Step 1
factor out CF

$2(5x^2 - 11x + 2)$

⇒

Step 2
factor what is left
in the brackets
using the method
of your choice

$2(x-2)(5x-1)$

*Be sure to leave CF
out front for your
final answer*

$\frac{M}{10}$	$\frac{A}{-11}$	$\frac{N}{-10, 1}$
		$\frac{-10}{5}$
		$\frac{1}{5}$
		Reduce
		$\frac{-2}{1}, \frac{-1}{5}$

Now you try

Factor

$3x^2 + 3x - 18$

$$= 3(x^2 + x - 6) \quad \begin{array}{c} M \\ -6 \end{array} \quad \begin{array}{c} A \\ 1 \end{array} \quad \begin{array}{c} N \\ 3, -2 \\ 1 \end{array}$$

$$= 3(x+3)(x-2)$$

Special CasesPerfect Square

Factor

$4x^2 + 4x + 1$

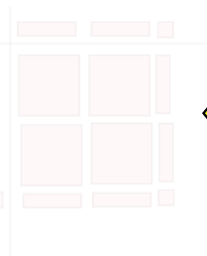
$$\begin{array}{c} M \\ 4 \end{array} \quad \begin{array}{c} A \\ 4 \end{array} \quad \begin{array}{c} N \\ 2, 2 \\ 4, 4 \\ 1, 1 \\ 1/2, 1/2 \end{array}$$

$$\sqrt{4} = 2 \quad \sqrt{1} = 1$$

$$= (2x+1)(2x+1)$$

$$= (2x+1)^2$$

Picture it:

Difference of Squares

Factor

$4x^2 - 1$

$$\begin{array}{c} M \\ -4 \end{array} \quad \begin{array}{c} A \\ 0 \end{array} \quad \begin{array}{c} N \\ -2, 2 \\ -4, 4 \\ -1, 1 \\ -1/2, 1/2 \end{array}$$

$$\sqrt{4} = 2 \quad \sqrt{1} = 1$$

$$= (2x-1)(2x+1)$$

HMWK

p 110 # 4 def

p 100 # 9 def

p 110 # 10 bcde, 11, 13 a,c

p 115 #1, 3abcd, 4def, 11, 12



(note #4c, 11 and 12 would make GREAT test questions)

